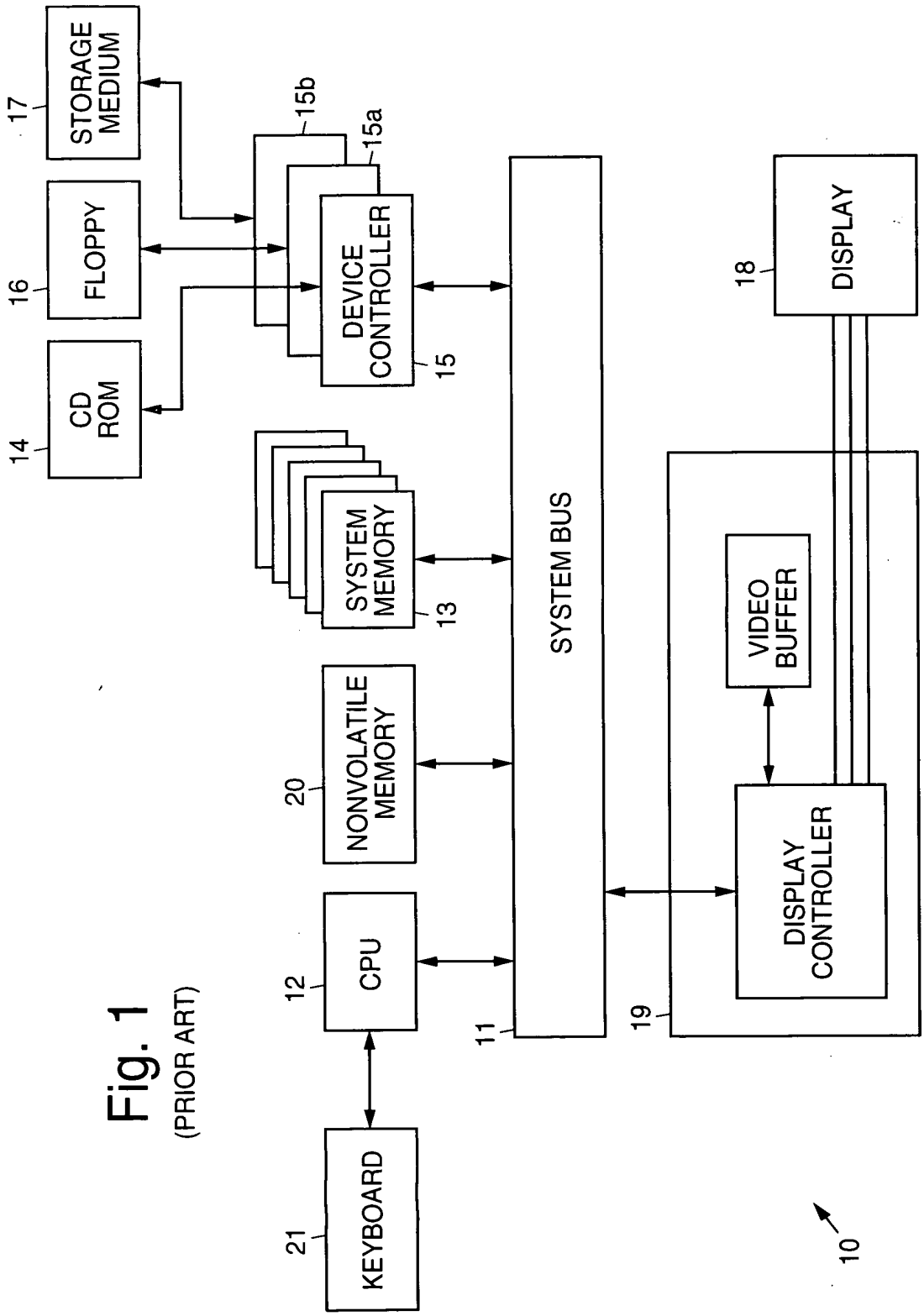


Fig. 1
(PRIOR ART)

Fig. 2

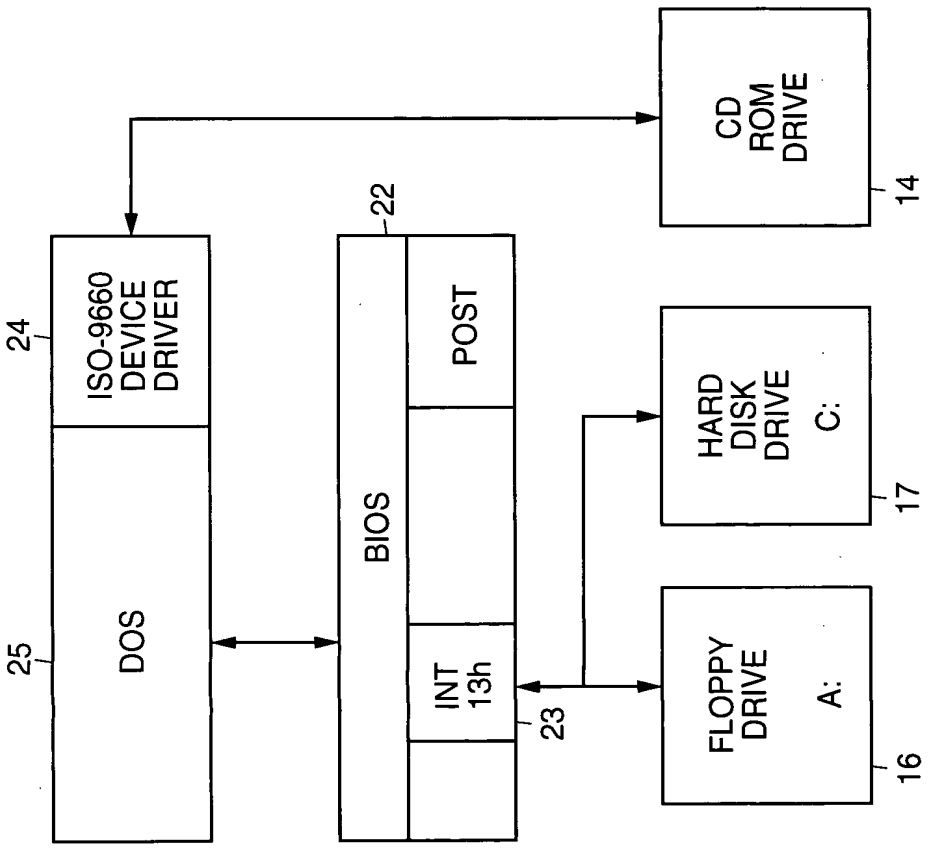

CD ROM DRIVE
14
22
24
ISO-9660 DEVICE DRIVER
BIOS
POST
DOS
25
INT 13h
23
HARD DISK DRIVE C:
17
FLOPPY DRIVE A:
16

Fig. 3

DOS-FORMATTED HARD DISK DRIVE STRUCTURE

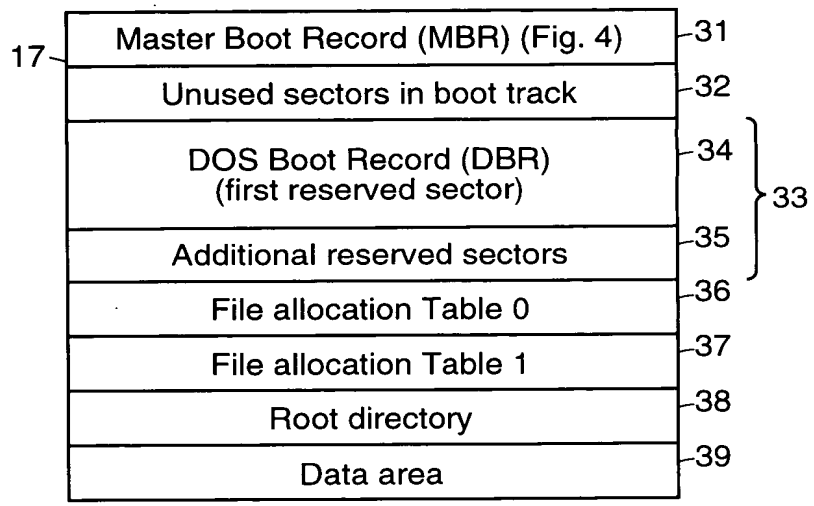


Fig. 4

STANDARD HARD DRIVE MASTER BOOT RECORD

BYTE OFFSET	FIELD LENGTH	VALUE	MEANING
000h	446 bytes		Code portion of the master boot record
1Beh	64 bytes		Partition table (Fig. 5)
1Feh	2 bytes	55h AAh	Validation signature

Fig. 5

PARTITION TABLE

BYTE OFFSET	FIELD SIZE	MEANING
000h	Byte	Boot indicator flag. 80h if partition is bootable, otherwise 00h
01h	Byte	Starting head of the partition
02h	Word	Starting cylinder and sector of partition
04h	Byte	System type
05h	Byte	Ending head of partition
06h	Word	Ending cylinder and sector of partition
07h	DWord	Prior Sectors
0Ch	DWord	Total sector in partition

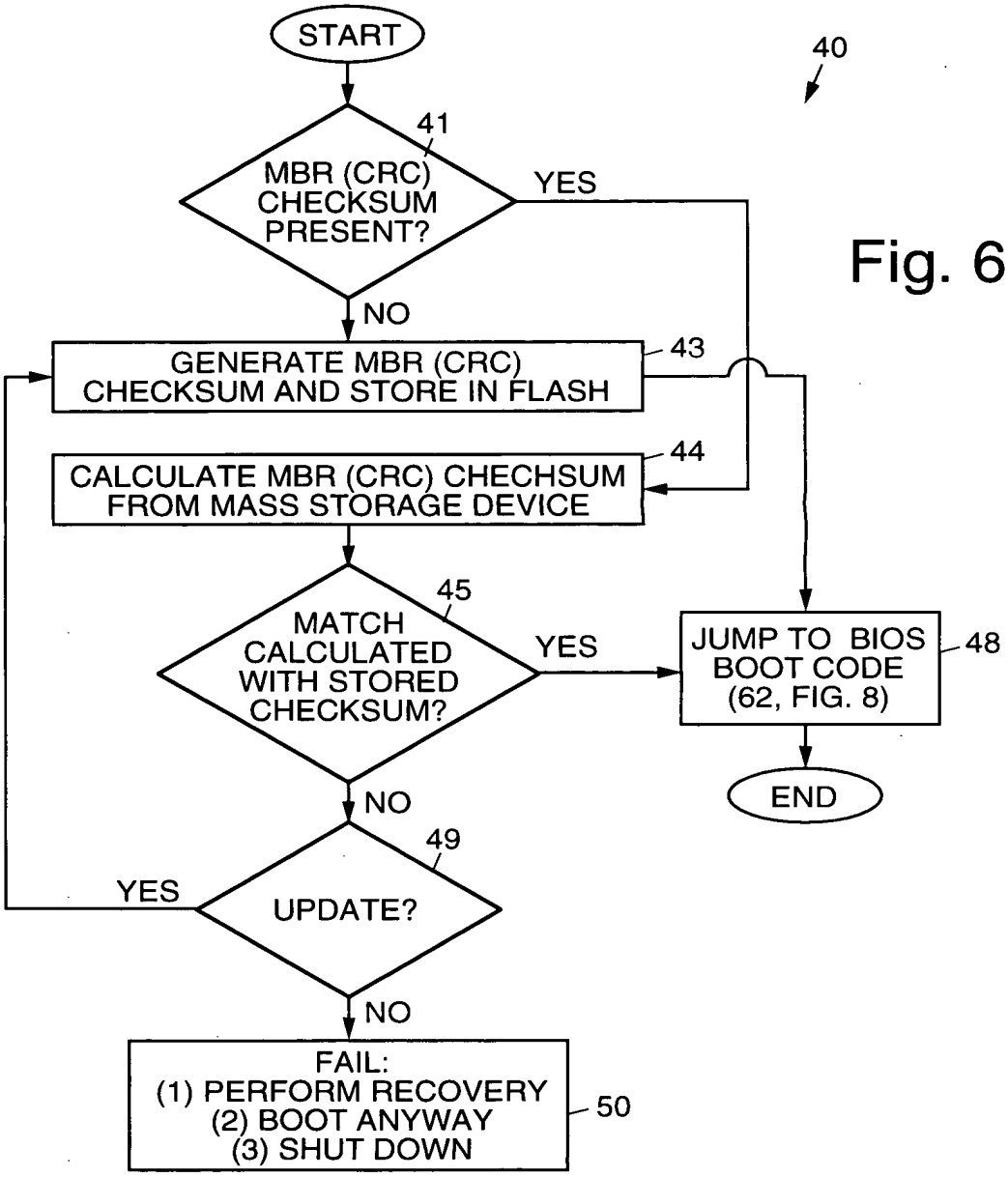

START
40
41
MBR (CRC) CHECKSUM PRESENT?
YES
NO
GENERATE MBR (CRC) CHECKSUM AND STORE IN FLASH
43
CALCULATE MBR (CRC) CHECHSUM FROM MASS STORAGE DEVICE
44
45
MATCH CALCULATED WITH STORED CHECKSUM?
YES
JUMP TO BIOS BOOT CODE (62, FIG. 8)
48
END
NO
49
YES
UPDATE?
NO
FAIL:
(1) PERFORM RECOVERY
(2) BOOT ANYWAY
(3) SHUT DOWN
50

Fig. 6

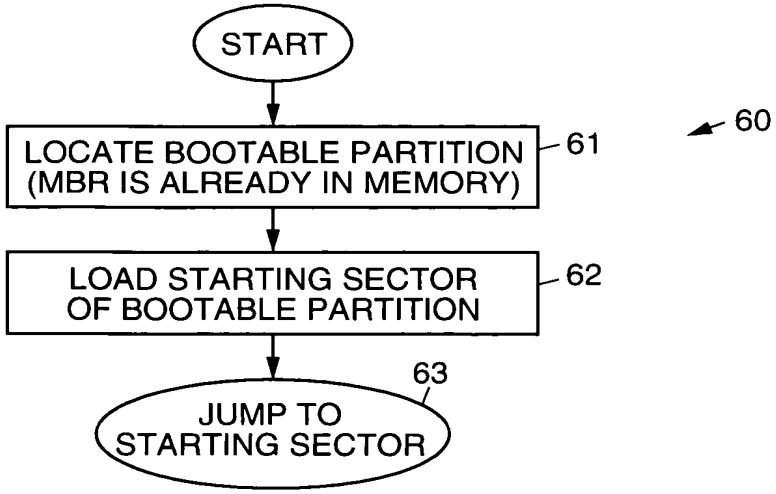

START
60
LOCATE BOOTABLE PARTITION (MBR IS ALREADY IN MEMORY)
61
LOAD STARTING SECTOR OF BOOTABLE PARTITION
62
63
JUMP TO STARTING SECTOR

Fig. 8

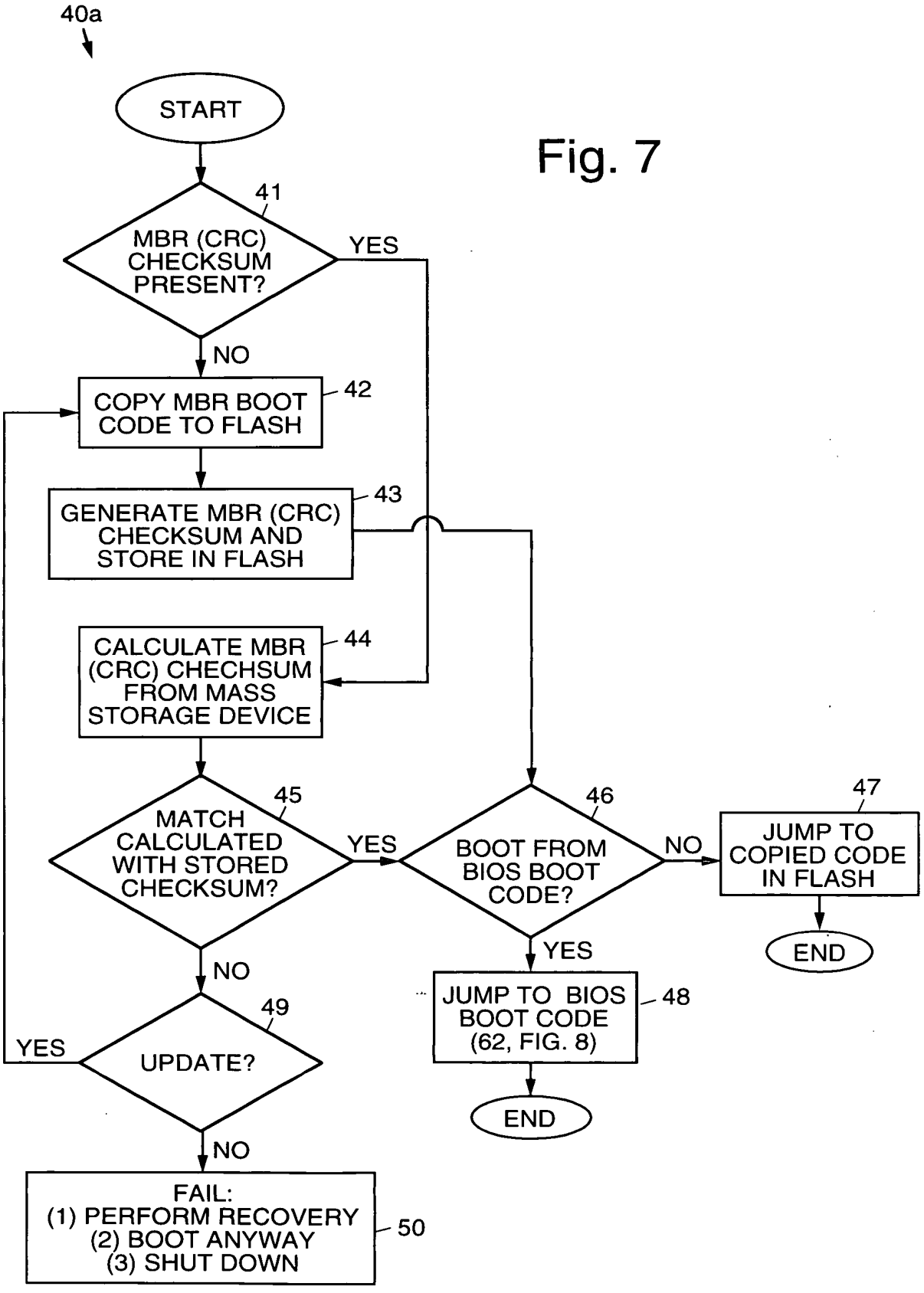
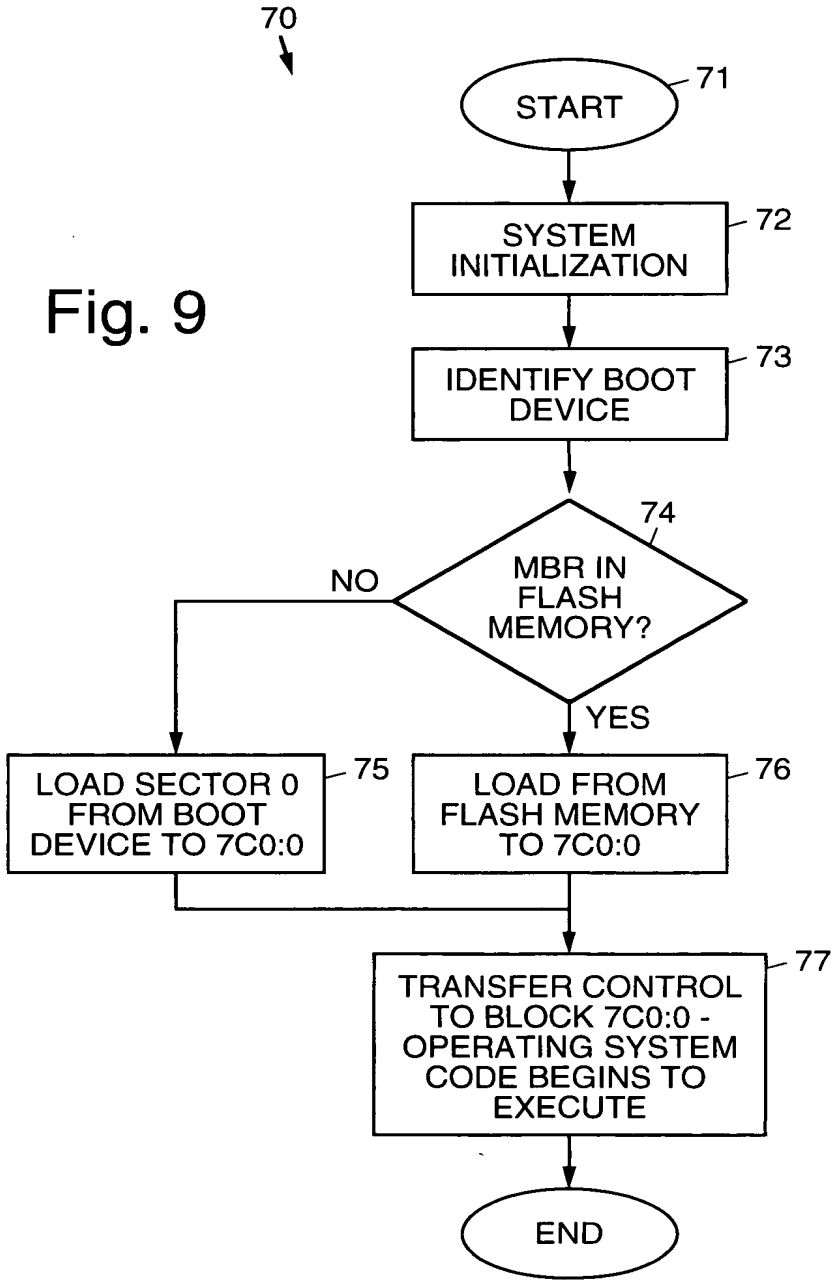

40a
START
41
MBR (CRC) CHECKSUM PRESENT?
YES
NO
COPY MBR BOOT CODE TO FLASH
42
GENERATE MBR (CRC) CHECKSUM AND STORE IN FLASH
43
CALCULATE MBR (CRC) CHECHSUM FROM MASS STORAGE DEVICE
44
MATCH CALCULATED WITH STORED CHECKSUM?
45
YES
NO
BOOT FROM BIOS BOOT CODE?
46
NO
JUMP TO COPIED CODE IN FLASH
47
END
YES
JUMP TO BIOS BOOT CODE (62, FIG. 8)
48
END
UPDATE?
49
YES
NO
FAIL:
(1) PERFORM RECOVERY
(2) BOOT ANYWAY
(3) SHUT DOWN
50

Fig. 7

Fig. 9


70
START
71
SYSTEM INITIALIZATION
72
IDENTIFY BOOT DEVICE
73
MBR IN FLASH MEMORY?
74
NO
YES
LOAD SECTOR 0 FROM BOOT DEVICE TO 7C0:0
75
LOAD FROM FLASH MEMORY TO 7C0:0
76
TRANSFER CONTROL TO BLOCK 7C0:0 - OPERATING SYSTEM CODE BEGINS TO EXECUTE
77
END